IN THE CLAIMS

The following is a complete listing of the claims, and replaces all earlier versions and listings.

1. (currently amended) An integrated cross-switching unit, which is used for a Time Division Multiplexing (TDM) system comprising a TDM line unit and a data service processing unit, comprising:

a bus identification module;

a cross-connecting module;

a mapping/de-mapping module;

an encapsulation/de-encapsulation module; and

a packet scheduling module; wherein

the bus identification module is adapted to identify a traffic source, to transmit~~s the data service and/or TDM service~~ traffic from the TDM line unit to the cross-connecting unit, and to transmit~~s the data service~~ packets from the data service processing unit to the packet scheduling module;

the cross-connecting module ~~implements cross-scheduling for~~ is adapted to schedule time slots of the ~~TDM service~~ traffic from the TDM line unit~~, and schedules the time slots corresponding to the data service from the TDM line unit to the mapping/de-mapping module~~;

the mapping/de-mapping module is adapted to ~~receives data frames~~ de-map the traffic from the cross-connecting module, and ~~implements mapping/de-mapping for the data~~ to map traffic from the encapsulation/de-encapsulation module;

the encapsulation/de-encapsulation module is adapted to ~~receives the data frames~~ de-encapsulate the traffic from the mapping/de-mapping module, ~~implements data link layer de-encapsulation,~~ and to encapsulate[[s]] the packets from the packet scheduling module; and

the packet scheduling module ~~receives the data packets~~ is adapted to schedule packets from the encapsulation/de-encapsulation module and/or the bus identification module, ~~to implement label-based packet scheduling; transmitting~~ and to transmit the scheduled ~~data~~ packets to the data service processing unit via packet bus or to the TDM line unit via the encapsulation/de-encapsulation module, the mapping/de-mapping module and the cross-connecting unit in turn.

2. (original) The integrated cross-switching unit according to claim 1, wherein a plurality of physical channels are configured between the mapping/de-mapping module and the encapsulation/de-encapsulation module, and between the encapsulation/de-encapsulation module and the packet scheduling module.

3. (original) The integrated cross-switching unit according to claim 2, wherein the plurality of physical channels are configured with different encapsulation protocols respectively.

4. (currently amended) The integrated cross-switching unit according to claim 2, wherein for the GFP frames from different physical channels, the encapsulation/de-encapsulation module finds CID field in the extended header of each GFP frame and directly forwards the data GFP frame with the CID field into the corresponding physical channel.

5. (currently amended) An integrated cross-switching unit, which is used for a TDM system including a TDM line unit and a data service processing unit, comprising:

a bus identification module;

a high-order cross-connecting module;

a high-order mapping/de-mapping module;

a high-order encapsulation/de-encapsulation module;

a high-order packet scheduling module;

a low-order cross-connecting module;

a low-order mapping/de-mapping module;

a low-order encapsulation/de-encapsulation module; and

a low-order packet scheduling module; wherein

the bus identification module is adapted to identify a traffic source, to transmit traffic ~~transmits the data service and/or TDM service~~ from the TDM line unit to the high-order cross-connecting module, and to transmit~~s the data service~~ packets from the data service processing unit to the high-order packet scheduling module;

the high-order cross-connecting module ~~schedules~~ is adapted to schedule the ~~service~~ traffic as required for low-order processing to the low-order cross-connecting module, and to ~~implements cross-scheduling for~~ perform high-order scheduling on time slots of the traffic from the TDM line unit ~~high-order TDM service, and schedules the time slots corresponding to the high-order data service from the TDM line unit to the high-order mapping/de-mapping module~~;

the low-order cross-connecting module is adapted to perform low-order scheduling on time slots of the traffic from the TDM line unit ~~implements cross-scheduling for time slots of low-order TDM service, and schedules the time slots corresponding to the low-order data service from the TDM line unit to the low-order mapping/de-mapping module~~;

the high-order and low-order mapping/de-mapping modules are adapted to de-map the traffic ~~receive the data frames~~ from the high-order and low-order cross-connecting modules correspondingly, and to map traffic ~~implement mapping/de-mapping for the data~~ from the high-order and low-order encapsulation/de-encapsulation modules respectively;

the high-order and low-order encapsulation/de-encapsulation modules are adapted to ~~receive the data frames~~ de-encapsulate the traffic from the high-order and low-order mapping/de-mapping modules correspondingly, and to encapsulate ~~implement data link layer de-encapsulation, and encapsulate the~~ packets from the high-order and low-order packet scheduling modules respectively;

the high-order packet scheduling module is adapted to schedule ~~receives the data~~ packets from the high-order encapsulation/de-encapsulation module and/or the bus identification module and ~~implements label-based packet scheduling;~~ to transmit[[s]] the scheduled ~~data~~ packets to the data service processing unit via packet bus or to the TDM line unit via the high-order encapsulation/de-encapsulation module, the high-order mapping/de-mapping unit, and the high-order cross-connecting module in turn;

the low-order packet scheduling module is adapted to schedule ~~receives the data~~ packets from the low-order encapsulation/de-encapsulation module and ~~implements label-based packet scheduling;~~ to transmit[[s]] the scheduled ~~data~~ packets to the TDM line unit via the low-order encapsulation/de-encapsulation module, the low-order mapping/de-mapping unit, and the low-order cross-connecting module in turn.

6. (currently amended) A ~~service~~ traffic scheduling method, comprising the steps of:

A) a bus identification module identifying a traffic source, transmitting ~~the data service and/or TDM service~~ traffic from the TDM line unit to ~~the~~ a cross-connecting module, and going to step B); and transmitting ~~the data service~~ packets from ~~the~~ a data service processing unit to ~~the~~ a packet scheduling module via packet bus, and going to step ~~C~~ E);

B) the cross-connecting module scheduling the traffic ~~implementing cross-scheduling for time slots of the TDM service, and transmitting the scheduled data to~~ from the TDM line unit, and going to step E); ~~or scheduling the time slots corresponding to the data service from the TDM line unit to the mapping/de-mapping module, the encapsulation/de-encapsulation module receiving the data service from the mapping/de-mapping module and transmitting the data service to the packet scheduling module, and going to step C);~~

C) a mapping/de-mapping module de-mapping the traffic from the cross-connecting module and mapping traffic from an encapsulation/de-encapsulation module;

D) an encapsulation/de-encapsulation module de-encapsulating the traffic from the mapping/de-mapping module and encapsulating packets from the packet scheduling module; and

~~E~~ E) the packet scheduling module scheduling packets from the encapsulation/de-encapsulation module and/or the bus identification module, and ~~implementing packet scheduling for the data service~~; transmitting ~~the~~ scheduled ~~data~~ packets to the data service processing unit via packet bus, or to the TDM line unit via the encapsulation/de-encapsulation module, the mapping/de-mapping module, and the cross-connecting module in turn.

7. (currently amended) The ~~service scheduling~~ method according to claim 6, wherein the identifying traffic source comprises: ~~bus identification module reports~~ reporting ~~the~~ a slot number corresponding to the data service processing unit and unit type of the data service processing unit to ~~the~~ a control unit via the data service processing unit, and ~~identifies~~ identifying the type of ~~the~~ a bus connected with the data service processing unit as a ~~backplane~~ packet bus ~~to identify service source~~.

8. (currently amended) The ~~service scheduling~~ method according to claim 6, ~~wherein~~ further comprising:

the TDM line unit and the data service processing unit copying the ~~service~~ traffic to a first integrated cross-switching unit and a second integrated cross-switching unit which have the same function and structure to implement the same ~~service~~ scheduling ~~procedure~~;

if the first integrated cross-switching unit and the second integrated cross-switching unit are both normal, the TDM line unit and the data service processing unit ~~receive~~ receiving the ~~same service streams~~ traffic from the first integrated cross-switching unit and the second integrated cross-switching unit, and selecting either of the[[m]] traffic to implement a

processing ~~based on the service streams~~;

if either of the first integrated cross-switching unit and the second integrated cross-switching unit goes wrong, the faulted integrated cross-switching unit ~~reports~~ reporting to the control unit, and the control unit ~~instructs~~ instructing the TDM line unit and the data service processing unit to select the ~~service stream~~ traffic of the normal integrated cross-switching unit.

9. (currently amended) The ~~service scheduling~~ method according to claim 6, ~~wherein~~ further comprising:

the TDM line unit and the data service processing unit copying the ~~service~~ traffic to ~~the~~ a first integrated cross-switching unit and ~~the~~ a second integrated cross-switching unit which have the same function and structure to implement the same ~~service~~ scheduling ~~procedure~~;

the TDM line unit and the data service processing unit ~~receive~~ receiving the ~~same service streams~~ traffic from the first integrated cross-switching unit and the second integrated cross-switching unit, ~~determine~~ determining whether the two ~~service streams~~ traffic is ~~are~~ normal, and selecting either of the[[m]] ~~and~~ traffic to implement a processing ~~based on the service streams~~ if the two ~~service streams are~~ traffic is both normal; if either of the[[m]] traffic is abnormal, selecting the normal ~~service stream~~ traffic.

10. (currently amended) The ~~service scheduling~~ method according to claim 6, ~~wherein~~ further comprising:

the TDM line unit and the data service processing unit ~~allocate~~ allocating the ~~service~~ traffic to ~~the~~ a first integrated cross-switching unit and ~~the~~ a second integrated

cross-switching unit which have the same function and structure to implement ~~service~~ scheduling;

if the first integrated cross-switching unit and the second integrated cross-switching unit are both normal, the TDM line unit and the data service processing unit ~~receive~~ receiving the ~~service streams~~ traffic from the first integrated cross-switching unit and the second integrated cross-switching unit to implement a processing ~~based on the service streams~~; if either of the first integrated cross-switching unit and the second integrated cross-switching unit goes wrong, the faulted integrated cross-switching unit ~~reports~~ reporting to ~~the~~ a control unit, and the control unit ~~instructs~~ instructing the TDM line unit and the data service processing unit to switch the ~~service~~ traffic allocated to the faulted integrated cross-switching unit to the normal integrated cross-switching unit.

11. (currently amended) The ~~service scheduling~~ method according to claim 6, ~~wherein~~ further comprising:

the TDM line unit and the data service processing unit ~~allocate~~ allocating the ~~service~~ traffic to ~~the~~ a first integrated cross-switching unit and ~~the~~ a second integrated cross-switching unit which have the same function and structure to implement ~~service~~ scheduling;

the TDM line unit and the data service processing unit ~~receive~~ receiving the ~~service streams~~ traffic from the first integrated cross-switching unit and the second integrated cross-switching unit and ~~determine~~ determining whether the ~~service streams are~~ traffic is normal;

if either of the ~~service streams~~ traffic is abnormal, switch the ~~service~~ traffic of the integrated cross-switching unit corresponding to the abnormal ~~service stream~~ traffic to the normal integrated cross-switching unit.

12. (currently amended) The ~~service scheduling~~ method according to claim 9, wherein the ~~service~~ traffic allocated to the first integrated cross-switching unit and the second integrated cross-switching unit has ~~priority~~ priorities; when either of the integrated cross-switching units goes wrong and needs ~~service~~ traffic switching, the high-priority ~~service~~ traffic ~~can~~ substitutes the low-priority ~~service~~ traffic under processing.

13. (currently amended) The ~~service scheduling~~ method according to claim 10, wherein the service allocated to the first integrated cross-switching unit and the second integrated cross-switching unit has priority; when either of the integrated cross-switching units goes wrong and needs service switching, the high-priority service can substitute the low-priority service under processing.

14. (currently amended) The integrated cross-switching unit according to claim ~~6~~ 1, wherein the TDM line unit is a synchronous digital hierarchy or synchronous optical network line unit.